

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Appln. No. 10/022,896

**REMARKS**

Applicants thank the Examiner for acknowledging acceptance of the drawings.

Applicants further thank the Examiner for acknowledging receipt of priority documents, but ask the Examiner to acknowledge their claims to priority.

Claims 1-13 are all the claims pending in the application.

Claim 12 stands rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter, and under 35 U.S.C. 112, second paragraph, as being indefinite. Applicants have amended claim 12, reciting a wide bandwidth Raman amplifier.

Claims 1-13 stand rejected under 35 U.S.C. 102(e) as being anticipated by USP 6,549,329 to Vail et al. Claims 1, 3, 4, 7, 12, and 16 stand rejected under 35 U.S.C. 102(e) as being anticipated by USP 6,292,288 to Akasaka et al. Applicants respectfully traverse these rejections, and request reconsideration and allowance of the claims in view of the following arguments.

Claim 1 of the present application recites independent power control of a plurality of different wavelength components of a wideband pump radiation signal. Vail teaches neither the wideband pump radiation signal nor the independent power control of different wavelength components of that signal.

As shown in Fig. 1, the Vail optical source uses an optical fiber 11 as a Raman gain medium. Pump energy at an initial wavelength, 1117nm, is introduced to one side of the Raman gain medium. As the pumping light propagates through the Raman gain medium 11, stimulated Raman scattering (SRS) gain is produced at the first Stokes order. Gratings 12 are tuned to 1175nm, within the wavelength range of the first Stokes order; gratings 14 are tuned to 1249nm,

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within the second Stokes order; gratings 16 are tuned to 1311nm, within the wavelength range of the third Stokes order; and gratings 18 are tuned to 1391 nm, within the wavelength range of the fourth Stokes order. Thus, in response to a pumping light at 1117nm, the Vail optical source outputs optical energy at wavelength 1475nm, 1480nm, and 1485nm at gratings 20B, 22B and 24B respectively (Vail, col. 5, line 9 to col. 6, line 9).

Thus, Vail produces a wideband pumping signal as an output from optical source 10, e.g., in Fig. 1, but does not provide for independent adjustment of different wavelength components as is required by claim 1. There is no way to adjust the magnitude of any one wavelength component, and the only magnitude control would then be adjustment of the magnitude of the original 1117 nm radiation signal, which would of course result in modification of all wavelength components. This is in contrast to the variable attenuators in the arrangements of Figs. 2 and 3 of the present application. Accordingly, Applicants respectfully submit that claim 1 and its dependent claims 2-10 are patentable over Vail.

Independent claims 11-13 are patentable for similar reasons.

Akasaka provides methods and apparatus for uniformly amplifying wavelength division multiplexing signals. Fig. 1 of Akasaka shows an embodiment of its Raman amplifier. Pumping lights generated by semiconductor lasers 3<sub>1</sub> and 3<sub>2</sub>, having central wavelength  $\lambda_1$ , and semiconductor lasers 3<sub>3</sub> and 3<sub>4</sub>, having wavelength  $\lambda_2$ , are polarization-combined by a polarization coupler 6 for each wavelength  $\lambda_1$  and  $\lambda_2$ , and output lights from the polarization coupler 6 are combined by a WDM coupler 11 to obtain output light of the pumping means 1. The output light of the pumping means 1 is coupled to an amplifier fiber 2 via a WDM coupler 13 to Raman-amplify an optical wavelength division multiplexing signal transmitted in the

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amplifier fiber 2 (Akasaka, col. 13, lines 27-61). In the pumping means 1, the lights from the semiconductors 3<sub>1</sub>, 3<sub>2</sub>, 3<sub>3</sub> and 3<sub>4</sub> go through a wavelength stabilizing fiber ratings 5, the polarization beam combiner 6, and the WDM coupler 11. Nothing in Akasaka indicates that the different wavelengths of pump radiation are independently adjustable as is required in the present claims. Accordingly, Applicants respectfully submit that claims 1-13 of the present application are patentable over Akasaka.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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